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**PATENT COOPERATION TREATY**

**PCT 10/534389**

REC'D 23 AUG 2005

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter II of the Patent Cooperation Treaty)


(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BWO6520-FG	<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416
International application No. PCT/B2004/000563	International filing date (day/month/year) 27.02.2004	Priority date (day/month/year) 06.03.2003	
International Patent Classification (IPC) or national classification and IPC H01K1/14, H01K1/04, H01K3/02			
Applicant C.R.F. SOCIETA CONSORTILE PER AZIONI et al.			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☒ sent to the applicant and to the International Bureau) a total of 8 sheets, as follows:
    - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 23.07.2004	Date of completion of this report 19.08.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Zuccatti, S  Telephone No. +49 89 2399-2710



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IB2004/000563

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-3, 5-21

as originally filed

4

received on 21.01.2005 with letter of 17.01.2005

**Claims, Numbers**

1-28

received on 21.01.2005 with letter of 17.01.2005

**Drawings, Sheets**

1/7-7/7

as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-28
	No: Claims	
Inventive step (IS)	Yes: Claims	1-28
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-28
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/IB2004/000563

The following documents are referred to in this report:

D1= US-A-4 196 368

D2= DE-A-198 45 423

D3= GB-A-2 032 173

**Re item V:**

1. Novelty:

None of the documents of the search report discloses an emitter or a method of manufacturing an emitter as defined in present claims 1 and 23.

The subject-matter of claims 1 and 23, and of the claims dependent thereon, meets the requirements of Article 33.3 PCT.

2. Inventive step:

The invention as defined in present claims 1 and 23 is characterized by a microstructured incandescent emitter with an oxide coating which is operative to preserve the profile of the microstructure at operating temperatures exceeding the melting point of the emitter material.

Microstructured incandescent light emitters are known from D1 and D2. It appears further to be obvious reduce evaporation of the emitter material by coating the surface of the emitter with a refractory oxide layer, see D3.

However, it is not apparent from D3 that the disclosed oxide layers are also suitable to preserve the profile of the microstructure in case of deformation or change of state of the material caused by the use of the emitter at temperatures exceeding the melting point of the emitter material.

This effect can be obtained, according to the present application, for example, by the provision of small cavities in the oxide layer which can absorb the volume expansion of the molten material (see present application, page 17, lines 14-33; figure 11).

This has the additional effect that very low melting point materials such as gold may be advantageously used as emitter material (see present application, page XXX).

D3, however, does not indicate, explicitly or implicitly, any features which would help to produce the effects as discussed above.

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The subject-matter of claims 1 and 23, both of which contain the same concept of an oxide coating which is suitable for preserving the shape of the emitter at operating temperatures higher than the melting point of the emitter material, meets therefore the requirements of Article 33.3 PCT. The same applies with respect to the dependent claims.

3. Industrial applicability is obvious (Article 33.4 PCT).

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